

12

# EUROPEAN PATENT APPLICATION

21 Application number: 89305727.3

51 Int. Cl. 4: F16B 5/10

22 Date of filing: 07.06.89

30 Priority: 17.06.88 GB 8814488

43 Date of publication of application:  
27.12.89 Bulletin 89/52

54 Designated Contracting States:  
AT BE CH DE ES FR GB GR IT LI LU NL SE

71 Applicant: DZUS FASTENER EUROPE LIMITED  
Farnham Trading Estate  
Farnham Surrey, GU9 9PL(GB)

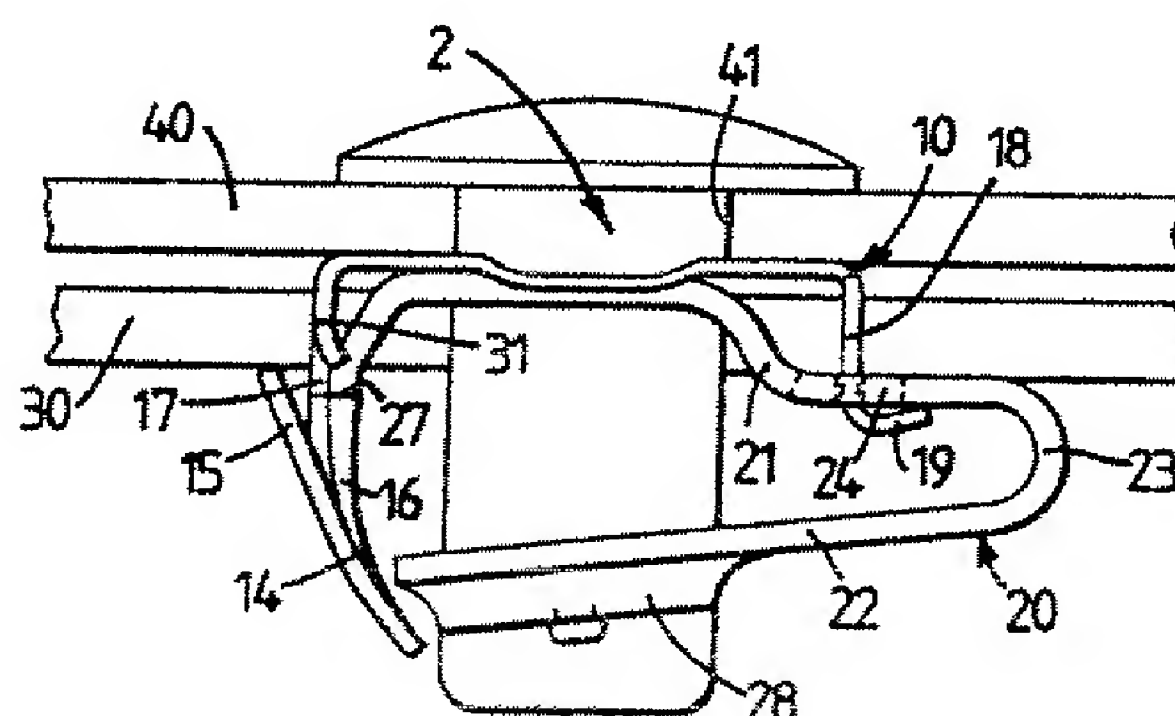
72 Inventor: Wright, Andrew Charles Walden  
4a Green Lane  
Farnham Surrey(GB)

74 Representative: Brunner, Michael John et al  
GILL JENNINGS & EVERY 53-64 Chancery  
Lane  
London WC2A 1HN(GB)

## 54 Receptacle for quick-release fastener.

57 A two-part front mounted receptacle for a quick-release fastener is disclosed. The receptacle has a body part (10) having a first, substantially planar, front element (11) with an aperture (13) therethrough, and a pair of leg elements (14,18) depending from the ends of the front element (11). A first one (14) of the leg elements has a sprung barb or barbs (15) in use engaging the rear face of the support (30) in which the receptacle is mounted. The receptacle also has a substantially U-shaped spring retainer (20), one side (21) of which is arranged to be engaged and held to each of the legs of the body part and which projects beyond the end of the body part remote from the first leg (14), and the second side (22) of which has a retention mechanism (27,28) for engaging and retaining in use a stud (2) connected therewith. The second side (22) is spaced on the opposite side of the first side (21) from the front element of the body part, and the first side has an aperture (25) aligned with the aperture in the body part and the retention mechanism to allow the stud to pass therethrough.

Fig.4.



## RECEPTACLE FOR QUICK-RELEASE FASTENER

The present invention relates to a receptacle for a quick-release fastener of the type having a stud and receptacle, one of the stud and receptacle having a cam slot or cam slots cooperating with a cross bar, tab or tabs to provide a locking action as the crossbar or tab moves between first and second positions along the cam slot. Such fasteners are well known, for example, see EP-A-0094150

Fasteners such as that referred to above are usually used to connect a panel or like member to a support member with the stud being held for rotation in an aperture in the panel and the receptacle being held in substantially fixed position in an aperture in the support. Many fasteners of this general type have a receptacle which requires to be fitted from the rear of the support, i.e., on the side opposite the panel, but receptacles have been proposed which can be inserted from the front. Insertion from the front simplifies the assembly process and, in certain cases where there is no access to the rear of the support, may be essential. Usually such front-mounted receptacles comprise either a one-part receptacle for simplicity, or comprise multiple parts which may be intended to accommodate thickness variations in the support, for example. However, one part front mounted receptacles, generally tend to be too stiff to be fitted easily and allow very little accommodation of thickness variations. Multiple part devices, whilst overcoming these problems, are generally expensive to manufacture as they usually comprise four or more parts.

Accordingly, there is a need for a front mounted receptacle to overcome these problems and therefore, in accordance with the present invention there is provided a two-part front mounted receptacle for a quick-release fastener, the receptacle having a body part having a first, substantially planar, front element with an aperture therethrough, and a pair of leg elements depending from the ends of the front element, a first one of the leg elements having a sprung barb or barbs in use engaging the rear face of the support in which the receptacle is mounted; and, a substantially U-shaped spring retainer one side of which is arranged to be engaged and held to each of the legs of the body part and which projects beyond the end of the body part remote from the first leg, and the second side of which has a retention mechanism for engaging and retaining in use a stud connected therewith, the second side being spaced on the opposite side of the first side from the front element of the body part, and the first side having an aperture aligned with the aperture in the body part and the retention mechanism to allow the stud to pass therethrough.

Preferably, the one side of the spring retainer has a transverse slot through which the second leg of the body part passes and the first leg includes an inwards projection providing a shoulder behind which the first side of the spring retainer can be snap-fitted to fix the end of the first side of the clip retainer, the second end being held by the second leg of the body part engaging through the slot.

The second leg of the body part preferably includes a transversely extending flange portion which, together with the portion projecting through the slot in the spring retainer, is narrower than the main part of the front element of the body part.

Advantageously, the first leg of the body part has a generally curved shape in the direction extending away from the front element whereby the receptacle can be inserted in an aperture by inserting the projecting end portion of the spring retainer through an aperture in the support and pushing the receptacle into the aperture so as to deflect the first leg until the barb or barbs snap-fit behind the support with the front element engaging the front of the support and retaining the receptacle thereon. Advantageously, the front element of the body part has a pair of sideways extending protrusions to engage the front of the support.

The retention mechanism on the spring retainer preferably comprises an aperture having a pair of inwardly directed tabs for engagement with a cam slot in a stud, but an alternative configuration comprises a tubular projection in which a pair of cam-slots are formed for engagement with the cross bar of a stud.

One example of a receptacle constructed in accordance with the present invention will now be described with reference to the accompanying drawings in which:-

Figure 1 is a plan view of the receptacle;

Figure 2 is an end view of the receptacle shown in position on a support;

Figure 3 is a side view of the spring retainer of the receptacle; and,

Figure 4 is a side view of a fastener incorporating such a receptacle.

The receptacle 1 comprises first and second parts 10,20 formed of spring steel. The receptacle is shown in Figures 2 and 4 mounted in an aperture 31 of a support 30 and Figure 4 shows a cooperating stud 2 mounted in an aperture 41 of a panel 40 attached to the support 30 by the fastener constituted by the stud and receptacle.

The first part 10 of the receptacle comprises a body part 10 having a substantially planar front element 11 with a pair of sideways projecting tabs



12 and a central circular aperture 13. As seen in Figure 2, the tabs are slightly inclined to the plane of the front element 11. Depending from one end of the front element 11 is a first leg 14 which is substantially curved in the direction extending away from the front element 11 and which includes a pair of barbs 15 of generally elongate triangular shape, formed on either side of the leg 14. The leg 14 also includes an inwardly projecting dimple 16 above which is an aperture 17, the dimple 16 providing a shoulder facing towards the underside of the front element 11.

The second part comprises a generally U-shaped spring retainer 20 having first and second sides 21, 22 and a bight portion 23. The first side 21 has a transverse slot 24, positioned in a first planar portion, through which extends a reduced width portion of a second leg 18 of the body part, the leg 18 having a sideways extending flange 19 which engages the underside of the first side 21 of the spring retainer.

The side 21 has a raised portion 25 which also has a circular aperture 26 aligned with the aperture 13 in the front element 11 and a free end 27 which is a snap-fit against the shoulder formed by the dimple 16. The distance between the end 27 and the adjacent end of the slot 24 is arranged to be slightly greater than the distance between the leg 18 and the leg 14 at the level just above the shoulder 16, so that the first side is a snap-fit in the body part and is retained without lengthwise movement.

The second side 22 of the spring retainer has an aperture 28 with a pair of radially inwardly directed tabs 29 for engagement with respective cam slots on the stud 2 which, together with the receptacle 1, constitutes a quick-release fastener.

In use, the receptacle is fitted at a rectangular aperture 31 in a support, by presenting the receptacle to the aperture at an angle and inserting the bight portion 23 through the aperture and then pushing the receptacle into the aperture until the barbs 15 snap behind the support at the other end, whereby the receptacle is then held between the tabs 12 on the front of the support and the barb 15 and bight portion 23 on the other side of the support.

## Claims

1. A two-part front mounted receptacle for a quick-release fastener, the receptacle having a body part (10) having a first, substantially planar, front element (11) with an aperture (13) therethrough, and a pair of leg elements (14, 18) depending from the ends of the front element (11), a first one (14) of the leg elements having a sprung barb

or barbs (15) in use engaging the rear face of the support (30) in which the receptacle is mounted; and, a substantially U-shaped spring retainer (20) one side (21) of which is arranged to be engaged and held to each of the legs of the body part and which projects beyond the end of the body part remote from the first leg (14), and the second side (22) of which has a retention mechanism (27, 28) for engaging and retaining in use a stud (2) connected therewith, the second side (22) being spaced on the opposite side of the first side (21) from the front element of the body part, and the first side having an aperture (25) aligned with the aperture in the body part and the retention mechanism to allow the stud to pass therethrough.

2. A receptacle according to claim 1, wherein the one side of the spring retainer has a transverse slot (24) through which the second leg (18) of the body part passes and the first leg (14) includes an inwards projection (16) providing a shoulder behind which the first side (21) of the spring retainer can be snap-fitted to fix the end of the first side of the spring retainer, the second end being held by the second leg (18) of the body part engaging through the slot (24).

3. A receptacle according to claim 1 or claim 2, wherein the second leg (18) of the body part includes a transversely extending flange portion (19) which, together with the portion projecting through the slot in the spring retainer (20), is narrower than the main part of the front element (11) of the body part.

4. A receptacle according to any of claims 1 to 3, wherein the first leg (14) of the body part (10) has a generally curved shape in the direction extending away from the front element (11) whereby the receptacle can be inserted in an aperture (31) by inserting the projecting end portion (23) of the spring retainer (20) through an aperture (30) in the support and pushing the receptacle into the aperture (31) so as to deflect the first leg (14) until the barb or barbs (15) snap-fit behind the support (30) with the front element (11) engaging the front of the support (30) and retaining the receptacle thereon.

5. A receptacle according to any of claims 1 to 4, wherein the front element (11) of the body part has a pair of sideways extending protrusions (12) to engage the front of the support (30).

6. A receptacle according to any of claims 1 to 5, wherein the retention mechanism on the spring retainer comprises an aperture (28) having a pair of inwardly directed tabs (29) for engagement with a cam slot in a stud (2).

7. A receptacle according to any of claims 1 to 5, wherein the retention mechanism on the spring retainer comprises a tubular projection in which a

pair of cam-slots are formed for engagement with the cross bar of a stud.

5

10

15

20

25

30

35

40

45

50

55

Fig. 3.

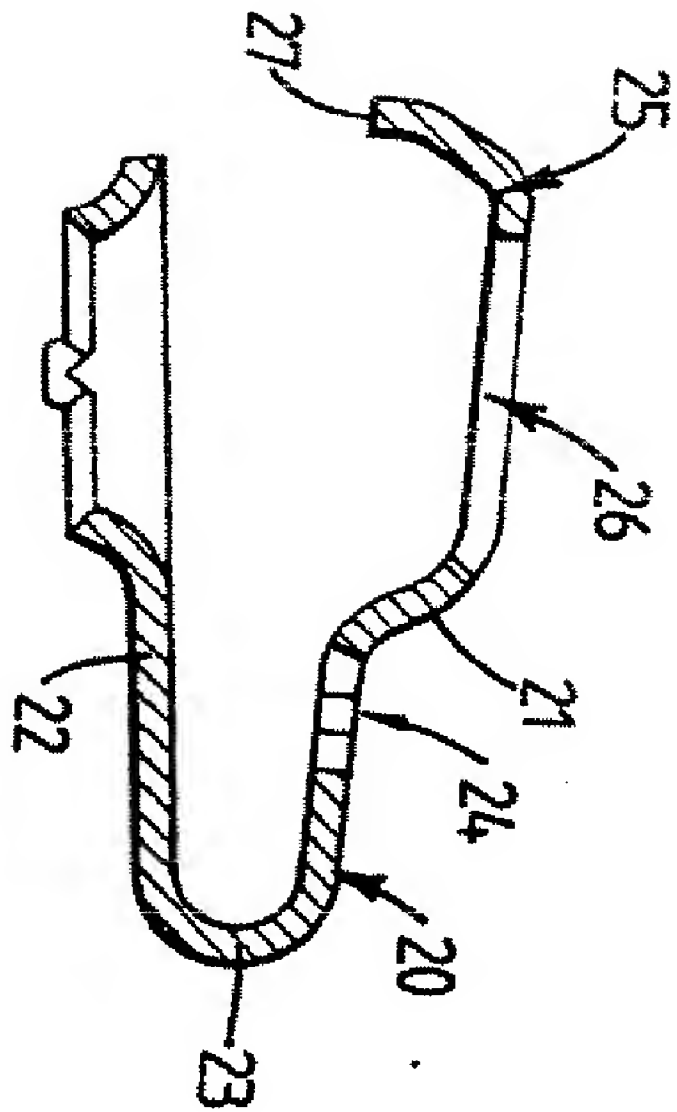


Fig. 1.

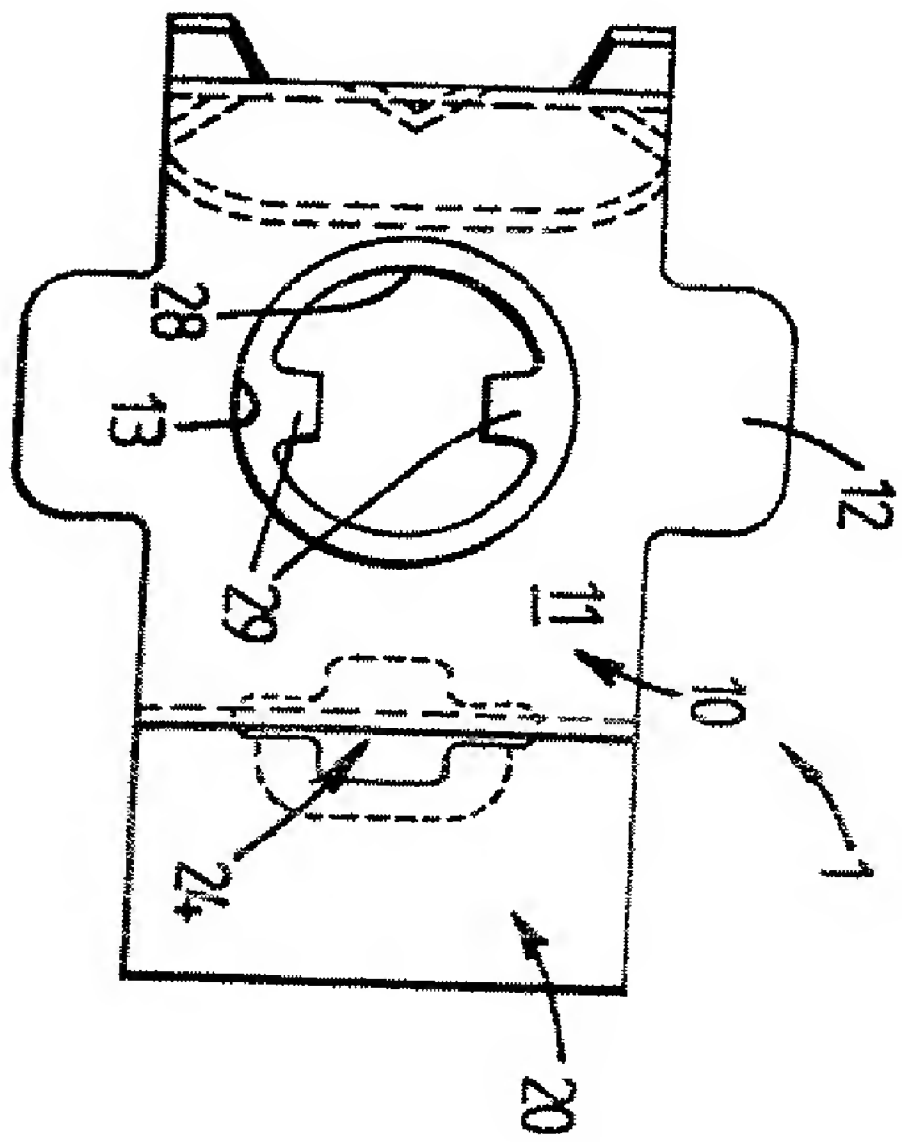


Fig. 2.

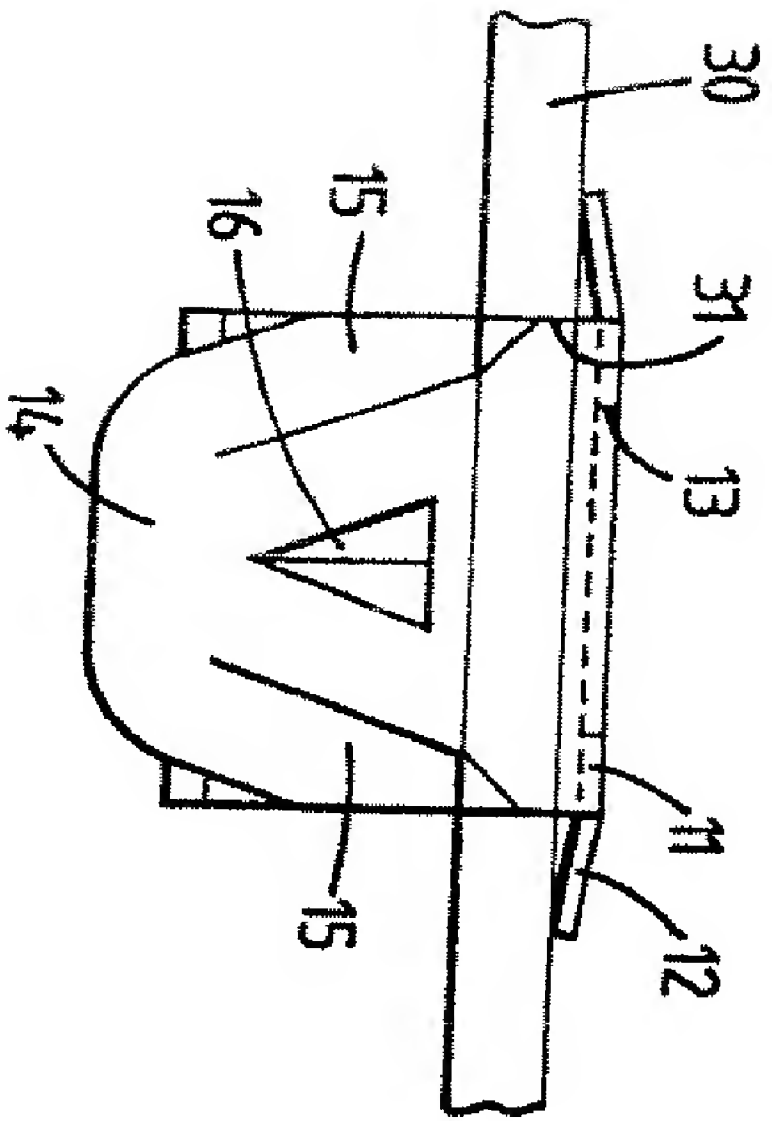
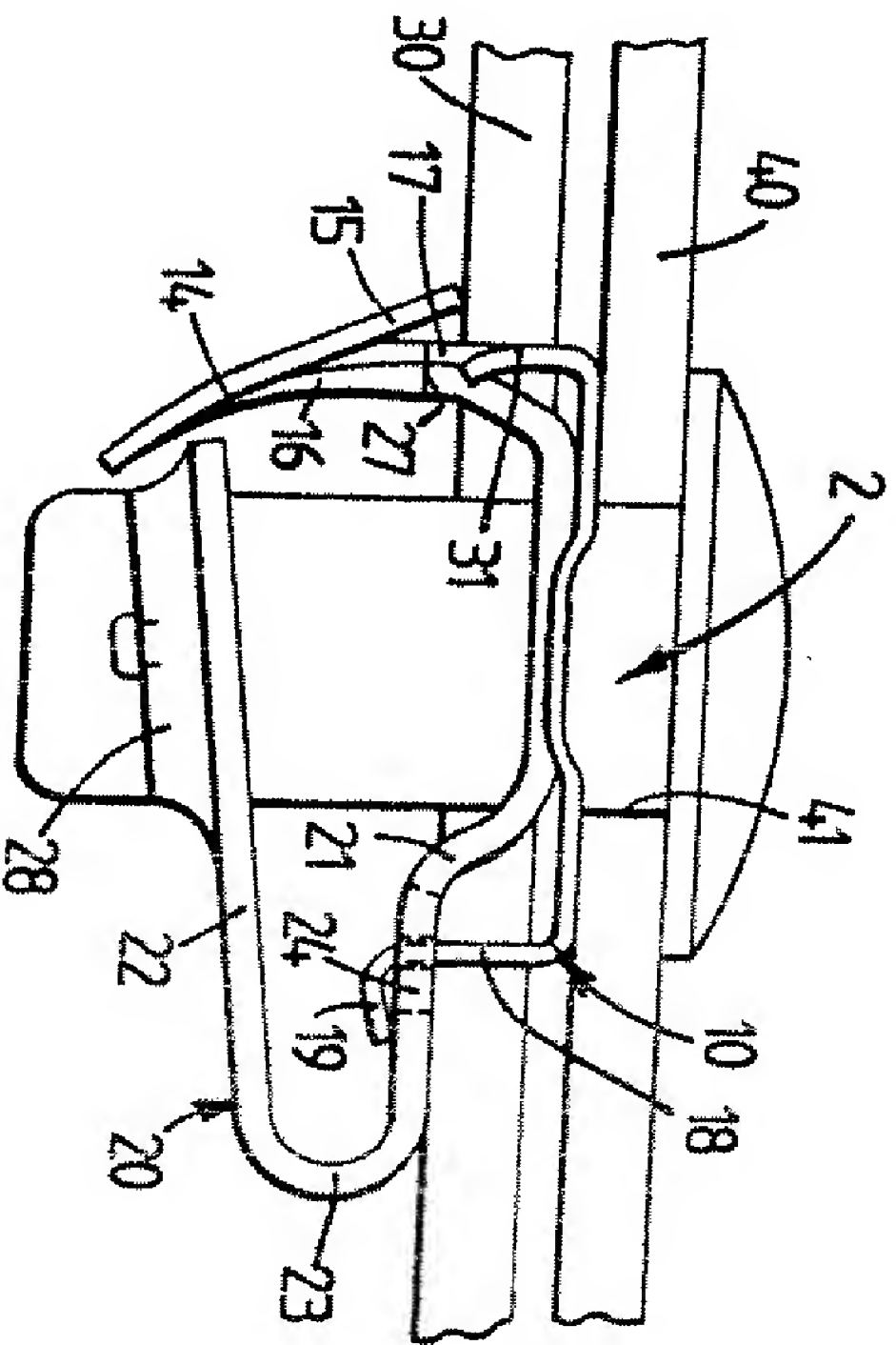


Fig. 4.





European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number

EP 89 30 5727

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	EP-A-0 097 746 (DZUS) ---		F 16 B 5/10
A	GB-A-2 177 751 (DZUS) ---		
A	DE-A-3 602 633 (CAMLOC) ---		
A	FR-A-2 360 776 (CAMLOC) ---		
D,A	EP-A-0 094 150 (DZUS) -----		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 4)
			F 16 B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		05-10-1989	VAN DER WAL W
<b>CATEGORY OF CITED DOCUMENTS</b>			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	